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Industry Cluster Analysis: Regional Economic Base Analysis

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Introduction

The changing economy of the Chicago metropolitan region provides both opportunities and challenges. Declining manufacturing employment has left many cities and neighborhoods in transition. With fortunes tied to the former heavy industries, the region has felt the impact enormously. While the new economy -- finance, health care, and other service based fields -- has helped the region to recover, a tremendous challenge remains: identifying the region's strong revenue generators in this new economic climate. This Regional Snapshot examines an identified group of industries, referred to as "industry clusters," that contribute to prosperity in northeastern Illinois. Please note that industry *clusters* are different than industry *sectors*, which are the broad categories used to define business types.

An industry cluster analysis identifies industries that are geographically concentrated or of a similar nature, and that make use of related buyers, suppliers, infrastructure and workforce. By identifying industry clusters, business recruitment, attraction and development efforts will be able to focus on companies that complement existing businesses. This report identifies several industry clusters that have a strong presence in the region and potential for future development.

This report offers an overview of the region's economy and a comparative analysis of its industries. It provides a basic profile of the economy of northeastern Illinois, examines the major industry sectors that make up its economy, and goes beyond a sector analysis to identify major industry clusters within the region. The report identifies sectors and clusters where the region may have a competitive advantage by analyzing employment concentration, wage levels, and employment growth, and provides county-level economic profiles.

Industry clusters within the region that have high location quotients, relatively high wages, and have experienced growth include Business and Financial Services; Biomedical/Biotechnical; and Transportation and Logistics. The Advanced Materials and Manufacturing clusters have declined in employment, but may be adapting to produce more specialized products in the areas of green technology, green manufacturing, and renewable energy products. Other clusters of note that are discussed include Education; Arts and Entertainment; Printing & Publishing; Chemicals; Information Technology and Telecommunications; and Energy.

Next steps in this work will include targeting more specific clusters, tracking and forecasting their economic growth and performance, and addressing clusters at smaller geographies. Ultimately, an understanding of industry clusters will inform the recommendations of the *GO TO 2040* plan, the long-range plan for the future of the Chicago metropolitan region.

A shorter version of this document meant for a general audience is available online at: [add link](#).

Methodology and Definitions

The analysis looked at the period of 2000 to 2007 (the most current data available at the time the analysis was undertaken). The cluster analysis report uses Quarterly Census of Employment and Wages (QCEW) data for private and public sector employment based on the North American Industry Classification (NAICS). QCEW data is the official employment and wage data reported by employers to the state. The employment figures for northeastern Illinois were provided by the Illinois Department of Employment Security and the national employment and wage figures come from the Bureau of Labor Statistics (BLS). The industry analysis for this report is quite detailed. The industry analysis, which begins on page 16, analyzes industry groups at the 4-digit NAICS code level. The cluster analysis, which begins on page 22, is comprised of the national industries at the highest level of detail, the 6-digit NAICS code level. The analysis of the counties uses sector classification, the 2-digit NAICS code level.

Difference between Sectors and Clusters

Industry sectors represent general categories of economic activities. Within each sector are groups and firms that do similar work, make similar products, or provide similar services. Examples of industry sectors include manufacturing, wholesale trade, and information.

Industry clusters represent firms and industries that are interdependent and characterized by the buyer-supplier relationship as well as shared labor pool and institutions (i.e. workforce boards, research parks, etc.). Clusters also share geographic proximity. The clusters definitions used in this document are taken from the Purdue Center for Regional Development and the Indiana Business Research Center, and are available here: <http://www.ibrc.indiana.edu/innovation/clusters.html>

Regional Profile

Population

Northeastern Illinois is home to over 8.5 million people. Of these, over half live in Cook County. The collar counties grew exponentially over the seven year period. Kendall County was the fastest growing county in the country during this time and Will County added the most people in the state from 2000 to 2007.

Area	2000	2007	% Change
Cook	5,376,741	5,285,107	-1.7%
DuPage	904,161	929,192	2.8%
Kane	404,119	501,021	24.0%
Kendall	54,544	96,818	77.5%
Lake	644,356	710,241	10.2%
McHenry	260,077	315,943	21.5%
Will	502,266	673,586	34.1%
Region-wide	8,146,264	8,511,908	4.5%

TABLE 1 -- Source: US Census Bureau

Labor Force

The northeastern Illinois region is the economic engine of the state. Employment figures from the Illinois Department of Employment Securities shows that northeastern Illinois contains approximately two-thirds of all jobs in the state. Over a seven year period the region gained jobs with Kane, Kendall, McHenry, and Will counties reporting gains over 20%.

Area	2000	2007	% Change
Cook	2,344,422	2,506,529	6.9%
DuPage	524,025	589,545	12.5%
Kane	165,760	206,450	24.5%
Kendall	13,110	21,673	65.3%
Lake	264,402	323,999	22.5%
McHenry	74,530	99,986	34.2%
Will	118,186	185,672	57.1%
Region-wide	3,504,435	3,933,854	12.3%

Table 2 -- Source: IDES

Unemployment Rate

The statewide unemployment rate was 5.0% in 2007. The region was 4.9%. Only two counties, Cook and Lake, had unemployment rates above the State average, while the other five counties retained rates below 4.8%. These numbers obviously rose in 2008, but statistics were not available at the time of this report's preparation.

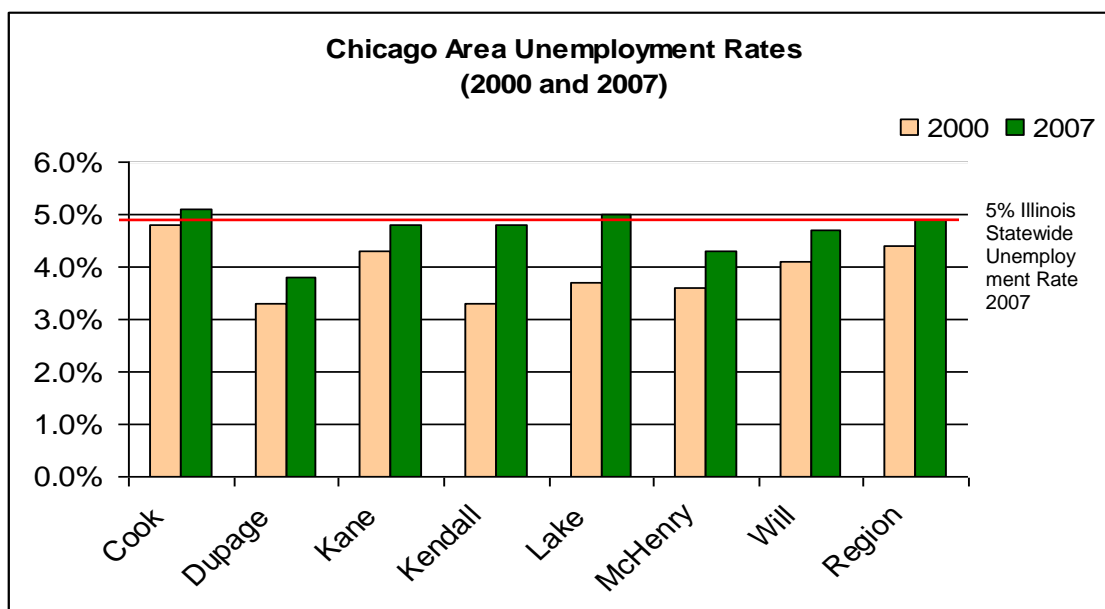


FIGURE 1 -- Source: Illinois Department of Employment Security (IDES)

Per Capita Income

The region had a per capita income in 2006 higher than the national average. Three counties, Cook, DuPage, and Lake Counties had higher per capita income levels. The remaining collar counties have relatively high per capita income close to the national average.

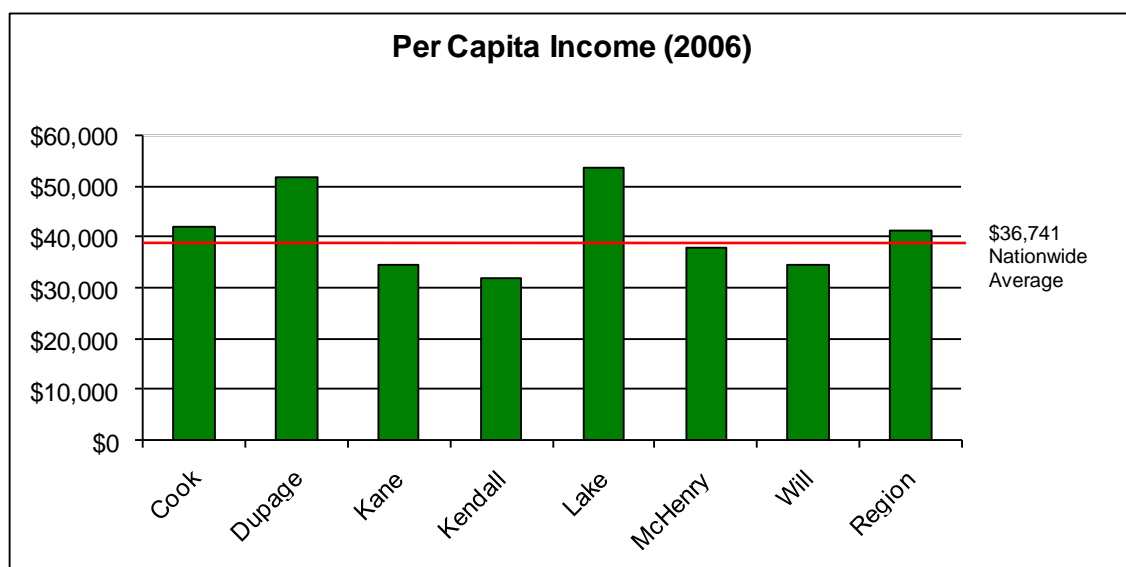


FIGURE 2 -- Source: Bureau of Economic Analysis

Employment by Sector

The following graph shows the composition of the region's economic base in 2007 in terms of industry sectors, which represent general categories of economic activity. A sector is comprised of industries and firms that do similar work, make similar products, or provide similar services. Based on traditional industry sector definitions, the Professional and Business Services sector provides the most jobs, and it is the leading employer in the region. Health and Education, Retail Trade, Government, and Manufacturing round out the top five leading industry sectors. Overall the region's economy has a fairly balanced spread across industry sectors. This reflects the diverse character of the region and can help provide resilience during national economic downturns.

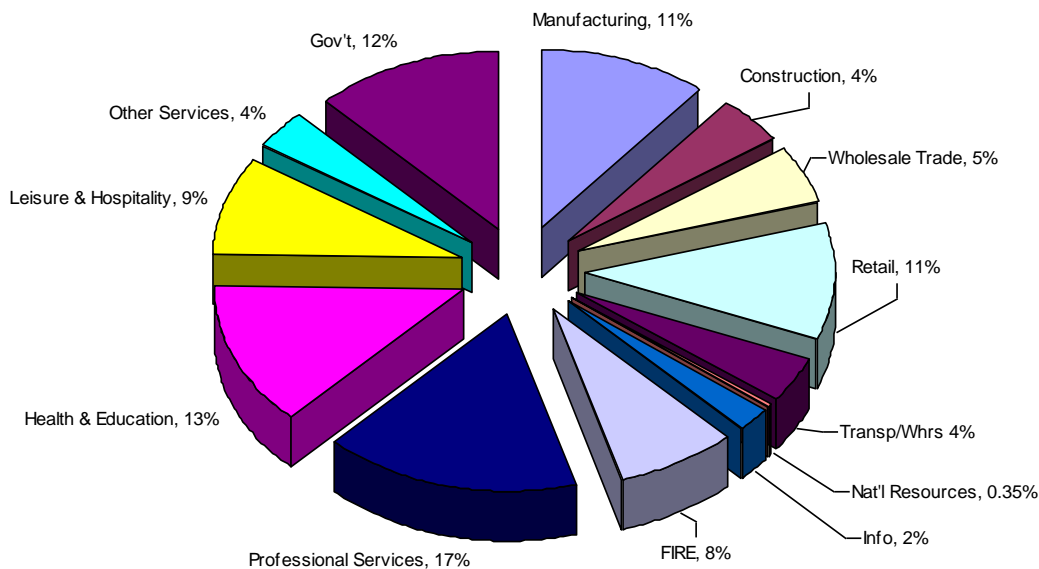


FIGURE 3 -- Source: Illinois Department of Employment Security (IDES) 2007

The ongoing recession has had serious negative economic impacts for the region, and the unemployment rate rose to over 7% by the end of 2008, as it has nationally. Over the last year the majority of job losses have been within Construction (9,000 jobs lost), Financial Services (4,500), Manufacturing (4,000), and Professional and Business Services (3,000). *GO TO 2040*, as a long-range plan, can provide little in the way of immediate relief to these dire economic conditions. However, from a long-range perspective, it is essential to plan for future economic prosperity by identifying growth industries and providing support and solutions in the regional planning process that sustain and retain them.

Gross Regional Product

Gross Regional Product in 2008 for northeastern Illinois was \$372 billion dollars (in chained 2000 dollars) according to estimates in the beginning of the year. Over 50 percent of the value of goods and services produced and used locally and exported from the region are derived through three major sectors -- Finance, Insurance, Real Estate (FIRE), Professional and Business Services and Manufacturing.

Northeast Illinois Gross Regional Product, 2008		
Industry	GRP (2000 \$)	Share of Total
Finance, Insurance, Real Estate (FIRE)	93,992,662,087	25.30%
Professional and Business Services	62,708,030,612	16.88%
Manufacturing	44,452,904,279	11.96%
Wholesale Trade	27,997,948,424	7.54%
Retail	23,257,139,410	6.26%
Government	22,247,413,343	5.99%
Information	22,272,759,898	5.99%
Health Services	21,667,870,753	5.83%
Transportation and Warehousing	14,425,816,677	3.88%
Leisure and Hospitality	11,356,050,414	3.06%
Construction	9,801,431,569	2.64%
Other Services	7,608,998,178	2.05%
Natural Resources	5,966,256,951	1.61%
Education	3,806,610,529	1.02%
Total	371,561,893,125	100.00%

Source on Gross Regional Product: Moody's Economy.com

According to the U.S. Department of Commerce, in 2007, the Chicago region was the sixth largest export market in the U.S. with export sales totaling over \$30 billion dollars of goods. The leading products exported were heavily from the manufacturing industry – chemicals was the largest good at 21 percent of the total, while other major exports included computer and electronics products, machinery (except electrical) and transportation equipment.

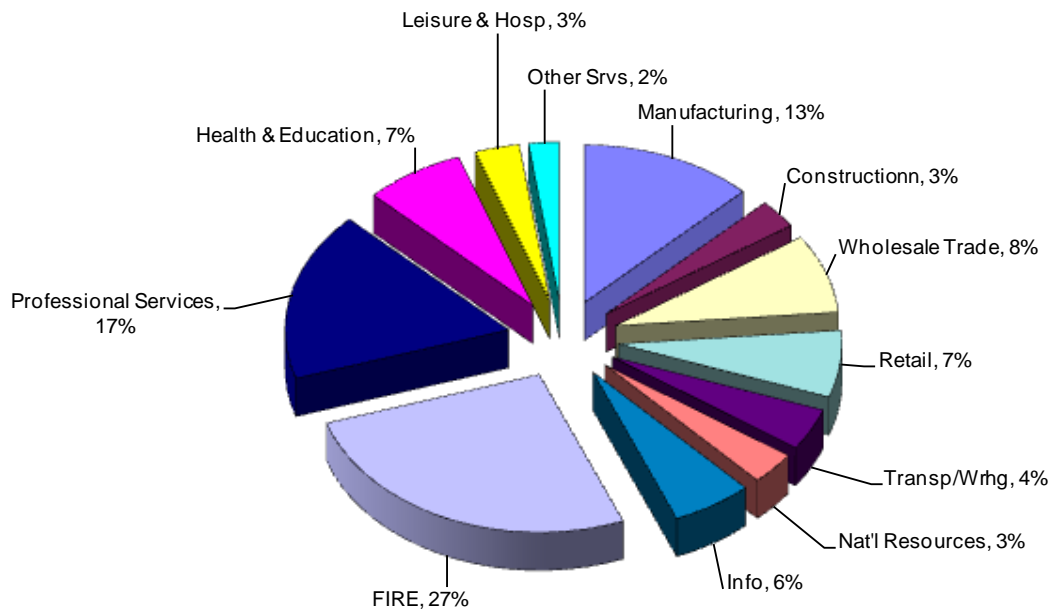


FIGURE 4 -- Source: Moody's Economy.com 2007

Summary

Overall the economy is diverse, though trends indicate an economy that is increasingly service oriented, particularly in professional and financial services. The region is constantly touted as the nation's freight hub, with six Class I railroads converging to eighteen intermodal yards, two international airports and several interstate highways.

Despite its strengths, the region faces many challenges which include developing a skilled workforce that can adapt to the changes demanded by today's integrated global economy; modernizing and increasing the capacity of the transportation network in order to efficiently move and process the increasing number of trucks, trains, and people across the region; fostering an overall climate of innovation; driving stronger collaboration across all sectors through public/private partnership; and discovering a unique economic identity to drive its global competitive advantage.

Comparative Analysis

A comparative analysis was conducted to identify how the region's sectors and industry clusters have performed over a seven year period when compared to the United States. Three benchmarks are used to identify sectors and clusters in this report that may have a competitive advantage: a high employment concentration (referred to as a location quotient); high wage levels; and fast employment growth in the region.

A high employment concentration (location quotient above 1.25) indicates a specialization in that sector, industry or cluster when compared to the national average, high wage levels can be a proxy for the value and knowledge added by the employee in that industry, cluster, or sector, and fast relative employment growth highlights growing demand for those industries or clusters. The bubble chart below provides information on the region's sector growth and concentration during the study period.

Interpreting the chart:

- The size of the bubble indicates the employment size (number of jobs).
- The horizontal axis indicates the employment change over the seven year period. Growth to the right of the graph is positive.
- The vertical axis indicates the concentration of that industry relative to the nation. A concentration of 1.25 or higher indicates that the industry is much more heavily concentrated in the region than in the nation.
- The retail trade sector is not included in the bubble chart, as this sector is highly localized and not generally a subject of cluster analyses.

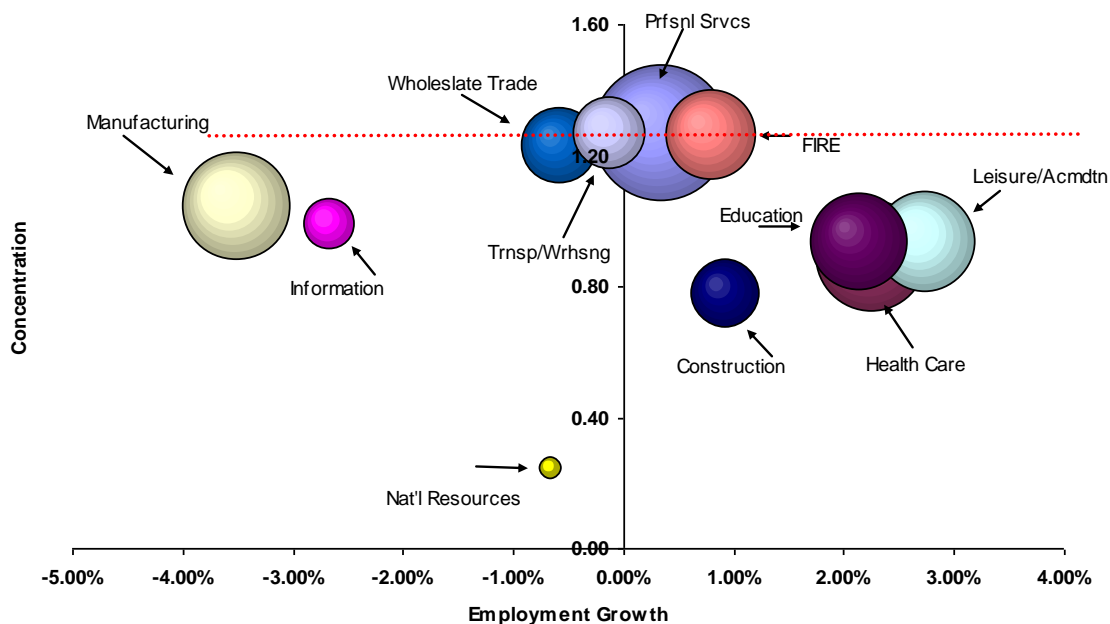


FIGURE 5 – Source: CMAP and IDES -- 2007

Highlights from the Sector Perspective

Professional Services; Finance, Insurance & Real Estate (FIRE); Transportation and Warehousing; and Wholesale Trade carry concentrations above 1.25. This indicates that these sectors are heavily concentrated in the region when compared to the nation. FIRE and Professional Services have seen modest growth in employment over the seven year period 0.80% and 0.34% respectively.

Professional Services provides the most jobs in the region (656,868), followed by Manufacturing (427,706), Health Care (419,166), and Leisure and Accommodation (343,212). The fastest growing sectors in the region are Leisure and Accommodation (2.74%) followed by Health Care (2.26%), and Education (2.13%). Each of these sectors employs a fairly large number of people, and their growth is expected to continue.

Manufacturing (-3.52%) reported the highest rate of job loss during the seven year period followed by Information (-2.67%) and Natural Resources (Agriculture, Mining, and Utilities) (-0.167). These three sectors shed a combined total of 141,725 jobs over the study period. The Manufacturing sector continues to employ many people, and the regional economy continues to adjust to job losses in this sector. It should be noted that regional GRP from manufacturing remains high, as described on the previous page; this is due to high productivity per worker and technological improvements. Employment decline in manufacturing is in line with national and international trends. It remains to be seen how these jobs and this sector will re-emerge with a renewed focus on green energy and specialized manufacturing.

Six of the eleven sectors in the region—Professional Services, FIRE, Construction, Education, Health Care, and Leisure and Accommodation reported job growth from 2000 to 2007.

Highlights from the Industry Perspective

Industries that have a high concentration (greater than 1.25) and low employment growth are *mature* industries in the region (figure 6, 7). They represent industries that have a stronghold but have not recently experienced any significant growth. Many of them are manufacturing industries (i.e. Pharmaceutical and Medicine Manufacturing, Forging and Stamping). Although these appear to be in decline, global supply chain patterns have caused manufacturing to be integrated into transportation and warehousing industries. Further analysis indicates that these industries pay a competitive wage. A cluster approach can capture the importance of what are at first glance declining industries.

Industries with high concentration and high employment growth are *important growth* industries in the region (figure 8, 9). They represent industries that export their products or knowledge out of the region and may have a competitive advantage because they are more concentrated in this region than in other areas. Eighteen industries fall within this classification and eight industries also have wages above the national average. The important growth industries exemplify the diversity of the economy and the region

because they are spread through all sectors. The industries do not operate in a bubble and they are strengthened by competing and complementary firms through the development of clusters.

Industries with low concentration but high employment growth may be *potential emerging* industries (figure 10). High employment growth indicates that the industry and its products are demanded by local consumers and are being exported. That demand is met with increased labor. Thirteen industries are considered potentially emerging and offer competitive wages when compared to the national average. These industries are likely growing due to the effects of maturing and important growing industries which have created a demand for industries that had not previously experienced much growth. A cluster based approach can connect the strengths and needs of these industries with similar labor pools, supply chain needs, and business strategies.

Data Sources

The industry analysis report uses Quarterly Census of Employment and Wages (QCEW) data for private and public sector employment based on the North American Industry Classification System (NAICS). The Illinois Department of Employment Security (IDES) provided the employment figures for the northeastern Illinois region. The national information comes from the Bureau of Labor Statistics (BLS).

Three benchmarks are traditionally used to identify industries that may have a competitive advantage. The criterion is location quotients, high wage levels, and average annual wage.

- **Location Quotient** is a ratio that compares employment in a particular industry in the region to the employment in that same industry in the nation. If the location quotient exceeds 1.0 the region's share exceeds the national share. Thus, it is more concentrated. This analysis focused on sectors, industries, and clusters with concentration of 1.25, which indicates the region has a concentration 25% or greater than that found in the United States as a whole.
- **Average annual growth** is analyzed to identify industries that in the seven year period are growing faster in the region when compared to average national growth. This indicates that the industry is active and growing to meet increasing demand.
- When the **wage level** of an industry or cluster in the Chicago Metropolitan Area is ten percent (10%) or greater than the US average the region also has an advantage. Wage levels place a value on production of goods. "In a knowledge-based economy, average wage levels should be high for those industries that value innovation and knowledge creation."[†]

[†] Mayer, Heike "Cluster Monitor," Economic Development Journal/Fall 2005 (pg 44).

Detailed Industry Analysis

Mature Industries

Mature industries have strong concentration (above the 1.25 benchmark) but have had declines in employment growth or are not growing faster than the average for these industries in the United States. The northeastern region has two dozen industries that are considered mature. Half of these industries are *Goods Producing* – specifically, manufacturing, while the other half are *Service Oriented* – professional services and finance.

FIGURE 6 – Mature Goods Producing Industries

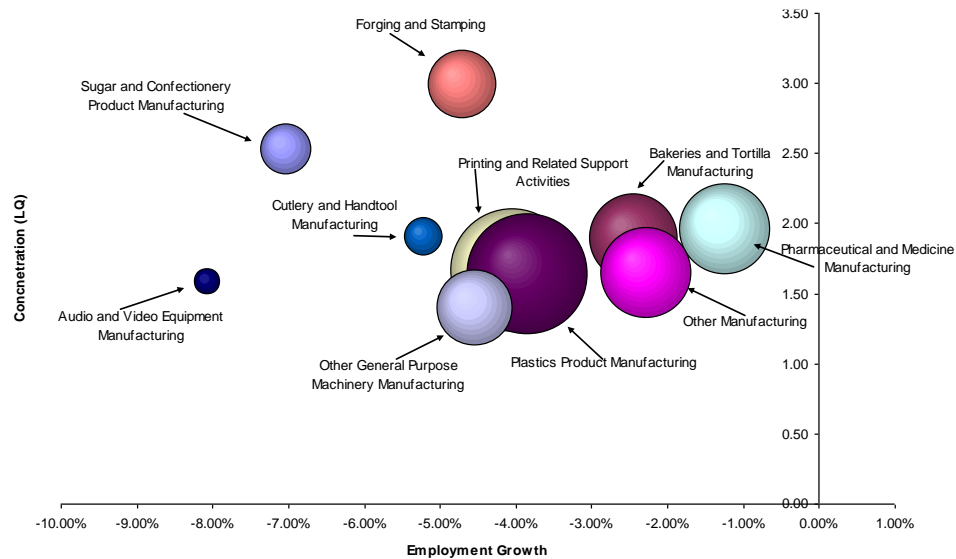


TABLE 4 – Mature Goods Producing Industries

Industry	US Wkly Wage	MSA Wkly Wage	Comparison
Sugar and Confectionery Product Manufacturing	\$829	\$1,018	22.80%
Bakeries and Tortilla Manufacturing	\$623	\$792	27.13%
Printing and Related Support Activities	\$830	\$966	16.39%
Pharmaceutical and Medicine Manufacturing	\$2,317	\$2,648	14.29%
Plastics Product Manufacturing	\$794	\$924	16.37%
Forging and Stamping	\$904	\$1,159	28.21%
Cutlery and Hand tool Manufacturing	\$919	\$1,236	34.49%
Other General Purpose Machinery Manufacturing	\$1,077	\$1,214	12.72%
Audio and Video Equipment Manufacturing	\$1,151	\$1,273	10.60%
Other Miscellaneous Manufacturing	\$807	\$1,118	38.54%

The goods producing industries seen above in *Figure 6* are heavily concentrated in the region and pay a competitive wage. These ten manufacturing industries carry concentrations above 1.50 with Forging and Stamping (2.99), Sugar and Confectionery Product Manufacturing (2.53) and Pharmaceutical and Medicine Manufacturing (1.96) round out the top three. All of these industries are considered advanced manufacturing and materials – the end stage of products to be used by a consumer or business (i.e. paper, medicine, hand tools, etc.).

FIGURE 7 – Mature Service Oriented Industries

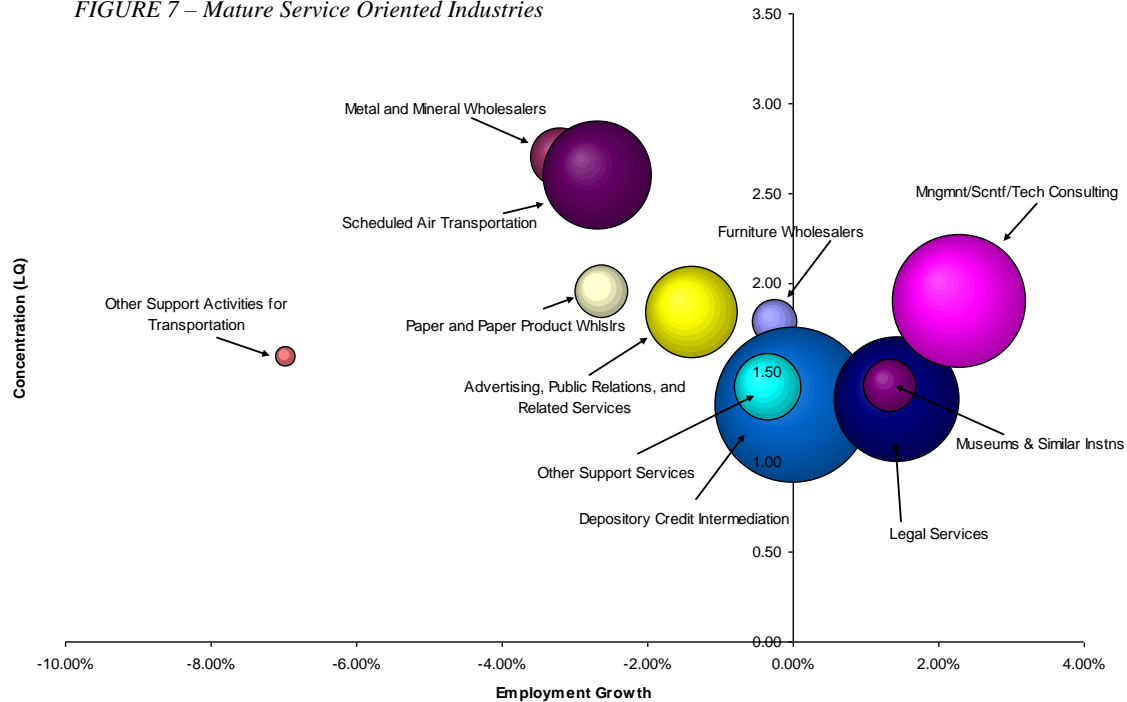


TABLE 5 – Mature Service Oriented Industries

Industry	US Wkly Wage	MSA Wkly Wage	Comparison
Furniture and Home Furnishing Merchant Wholesalers	\$979	\$1,172	19.71%
Metal and Mineral (except Petroleum) Merchant Wholesalers	\$1,179	\$1,326	12.47%
Paper and Paper Product Merchant Wholesalers	\$1,089	\$1,446	32.78%
Chemical and Allied Products Merchant Wholesalers	\$1,387	\$1,539	10.96%
Scheduled Air Transportation	\$1,101	\$1,318	19.71%
Other Support Activities for Transportation	\$626	\$721	15.18%
Depository Credit Intermediation	\$1,319	\$1,768	34.04%
Insurance and Employee Benefit Funds	\$1,901	\$3,716	95.48%
Legal Services	\$1,317	\$1,592	20.88%
Management, Scientific, and Technical Consulting Services	\$1,470	\$1,741	18.44%
Advertising, Public Relations, and Related Services	\$1,259	\$1,466	16.44%
Other Support Services	\$737	\$819	11.13%
Museums, Historical Sites, and Similar Institutions	\$570	\$646	13.33%

The service-providing industries depicted in *Figure 7* above have a strong concentration in the region and pay a competitive wage when compared to the national average in those industries. It is a clear mix between the industries that sell wholesale the advanced materials and products discussed above and Professional and Financial industries. Two industries in Professional Services – Management, Scientific, and Technical Consulting (1.90), Legal Services (1.35), and Museums, Historical Sites, and Similar Institutions in the Leisure sector (1.43) have had positive employment growth, although important for further analysis this growth has not been faster than the national average.

Important Growth Industries

Important growth industries are characterized with a high concentration (above 1.25) and have had healthy employment growth over the study period. The majority of these industry groups pay a competitive wage when compared to the US average. As detailed in *Table 6*, five industries pay an average wage thirty percent more than the national average, have seen the fastest growth, and have strong concentration. The industry groups are predominantly in the Professional Services and Financial sectors and include Management of Companies and Enterprises, Business Schools and Computer and Management Training, Commercial and Industrial Machinery and Equipment Rental and Leasing, Other Financial Investment Activities, and Business and Professional Organizations. Freight Transportation Arrangement (i.e. freight distribution, third party logistics) had the strongest concentration (2.63) and experienced employment growth over four percent.

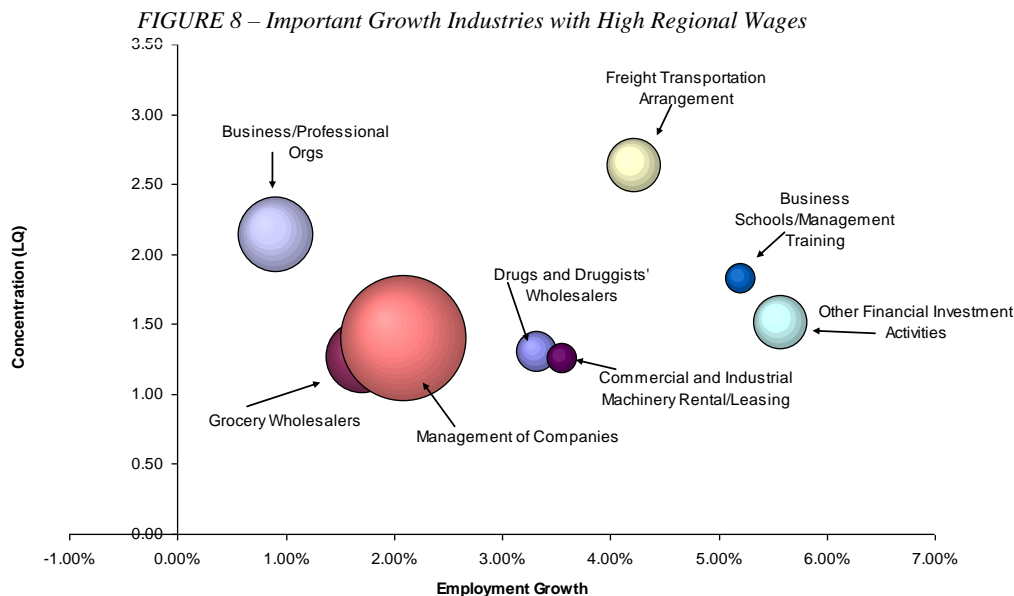


TABLE 6 – Important Growth Industries with High Regional Wages

Industry	US Wkly Wage	MSA Wkly Wage	Comparison
Drugs and Druggists' Sundries Merchant Wholesalers	\$1,922	\$2,195	14.20%
Grocery and Related Product Merchant Wholesalers	\$886	\$1,000	12.87%
Freight Transportation Arrangement	\$976	\$1,087	11.37%
Other Financial Investment Activities	\$4,826	\$6,883	42.62%
Commercial and Industrial Machinery and Equipment Rental and Leasing	\$1,135	\$1,537	35.42%
Management of Companies and Enterprises	\$2,203	\$2,883	30.87%
Business Schools and Computer and Management Training	\$1,068	\$1,689	58.15%
Business, Professional, Labor, Political, and Similar Organizations	\$884	\$1,116	26.24%

There are eleven more industries that are termed important growth in *Figure 9* below. Six of these industries also pay a weekly wage above the national average and include Support Activities for Rail Transportation, School and Employee Bus Transportation, Special Food Services, Other Amusement and Recreation Industries, Other Food Manufacturing, and Performing Arts Companies. Support Activities for Rail Transportation had the highest concentration (2.50), fastest growth (13.21%) and pays close to \$100 dollars above the national average. Other Amusement and Recreation Industries (1.44), Other Food Manufacturing (1.36), and Special Food Services (1.73) have above average wages while having employment growth over two percent in the seven year period. A cluster of additional industries include Social Advocacy Organizations (1.44), Activities related to Credit Intermediation (1.25), Personal Care Services (1.32), Other Information Services (1.50) have seen steady employment growth above four percent and moderately strong concentration in the region but do not have wages above the national average.

FIGURE 9 – Important Growth Industries without High Regional Wages



TABLE 7 – Important Growth Industries without High Regional Wages

Industry	US Wkly Wage	MSA Weekly Wage	Comparison
Other Food Manufacturing	\$1,026	\$1,059	3.22%
School and Employee Bus Transportation	\$375	\$409	9.07%
Other Transit and Ground Passenger Transportation	\$476	\$473	-0.63%
Support Activities for Rail Transportation	\$776	\$847	9.15%
Other Information Services	\$1,811	\$1,565	-13.58%
Activities Related to Credit Intermediation	\$1,283	\$1,208	-5.85%
Performing Arts Companies	\$640	\$647	1.09%
Other Amusement and Recreation Industries	\$346	\$364	5.20%
Special Food Services	\$380	\$403	6.05%
Personal Care Services	\$355	\$347	-2.25%
Social Advocacy Organizations	\$657	\$604	-8.07%
Securities and Commodity Contracts Intermediation and Brokerage	\$8,246	\$6,094	-26.10%
Securities and Commodity Exchanges	\$4,071	\$3,843	-5.60%

Emerging Industries

Emerging Industries are characterized by positive and in some instances strong employment growth during the study period, yet they do not yet have the concentration as set forth in this analysis. Thirteen industries, as depicted in *Figure 10* have seen employment growth faster than those industries in the nation and pay an average weekly wage greater than the national average. It is a mixture of Wholesale industries and Service oriented industries in Health Care, Education and Leisure. Home Health Care Services and Other Ambulatory Health Care Services have seen the fastest employment growth over five percent while paying close to 10% more in weekly wages. Medical Equipment and Supplies Manufacturing (1.12) and General Freight Trucking (1.09) are slightly more concentrated in the region and have had modest employment growth over the seven year period. Medical Equipment and Supplies Manufacturing pays on average 50% more in the region when compared to the national average. It should be pointed out that two industries do have concentrations above 1.00, which does indicate the region does have a specialization in these industries already.

Figure 10 – Emerging Industries

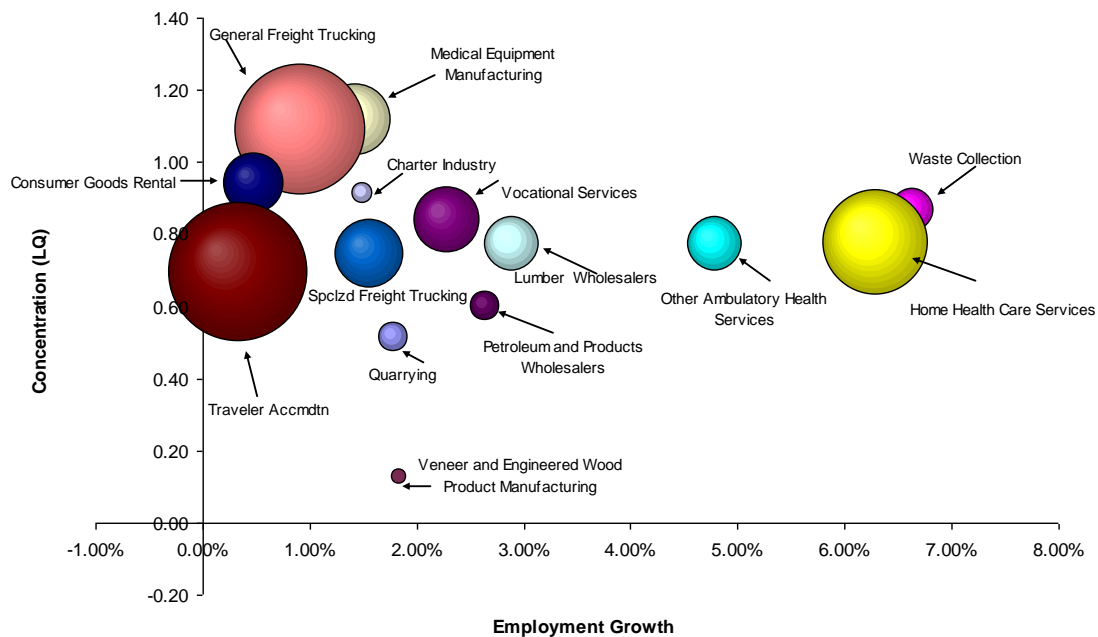


Table 8 – Emerging Industries

Industry	US Wkly Wage	MSA Wkly Wage	Comparison
Nonmetallic Mineral Mining and Quarrying	\$990	\$1,335	34.85%
Veneer, Plywood, and Engineered Wood Product Manufacturing	\$740	\$822	11.08%
Medical Equipment and Supplies Manufacturing	\$1,166	\$1,793	53.77%
Lumber and Other Construction Materials Merchant Wholesalers	\$978	\$1,091	11.55%
Petroleum and Petroleum Products Merchant Wholesalers	\$1,359	\$1,617	18.98%
General Freight Trucking	\$786	\$898	14.25%
Specialized Freight Trucking	\$706	\$872	23.51%
Charter Bus Industry	\$461	\$599	29.93%
Consumer Goods Rental	\$479	\$715	49.27%
Waste Collection	\$831	\$1,113	33.94%
Home Health Care Services	\$474	\$525	10.76%
Other Ambulatory Health Care Services	\$671	\$741	10.43%
Vocational Rehabilitation Services	\$436	\$534	22.48%
Traveler Accommodation	\$509	\$576	13.16%

Cluster Analysis

Industry clusters are different than the traditional industry sectors that were detailed earlier in this report. Clusters are interdependent firms that are linked through the buyer-supplier relationship, share common resources and technologies, depend on similar labor pool and institutions, and rely on special infrastructure. Industries and firms in clusters draw a productive advantage in being geographically located near these resources – and each other -- because it can help develop innovative products, build knowledge creation, and enhance cooperation and competition among firms. Cluster studies have been a focus in economic development efforts throughout the United States because of their ability to help regions understand their economy, build relationships among firms and identify strategies that can develop clusters as part of a long-term planning effort.

Clusters can differ depending on policy or development efforts. One example is North Carolina's "Research Triangle", where three educational institutions became the pillars of a planned science park that is home to scientists, researchers, and technicians. A second example, "Silicon Valley" in California, is home to a cluster of high-tech firms, manufacturers, and engineers, and has long been a leader in technological innovation. Finally, a recent strategic plan for the state of Florida targeted several clusters ranging from life sciences to clean energy in efforts to diversify its economic base.

A wide variety of methodologies can be used to identify clusters. For the purpose of this analysis efforts were made to use a methodology that encompasses a broad value-chain of interconnected industries otherwise known as "benchmark" clusters. These clusters can reveal important trends about the structure of the region's economy and serve as a tool to develop a more in-depth cluster based economic development strategy. The seventeen clusters used for this analysis were developed by the Center for Regional Development at Purdue University under the auspices of the U.S. Economic Development

Administration, and are available here:

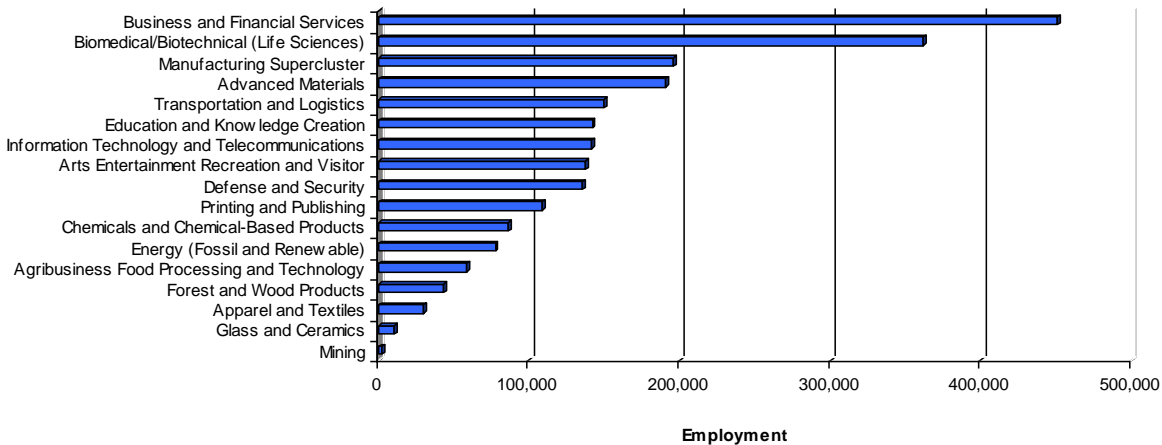
<http://www.ibrc.indiana.edu/innovation/clusters.html>

Benchmark clusters can reveal important trends about the structure of the region's economy and serve as a tool to develop a more in-depth cluster based economic development strategy. These clusters of interconnected industries that are linked through the buyer-supplier relationship, share common resources and technologies, depend on similar labor pool and institutions, and rely on special infrastructure. A simple example can be given with the Transportation and Logistics Cluster. The industries that drive the cluster could include local and long distance freight trucking, scheduled freight air transportation, inland water transportation, etc. The buyer and suppliers could include warehousing and storage, motor vehicle towing, and commercial equipment rental and leasing. Support industries could include logistics consulting services, navigational services, etc.

Figure 11 on the following page highlights the seventeen clusters and their employment levels in 2007. Business and Financial Services employed 450,709 followed by Biomedical/Biotechnical (Life Sciences), which employed 361,732. The other top three

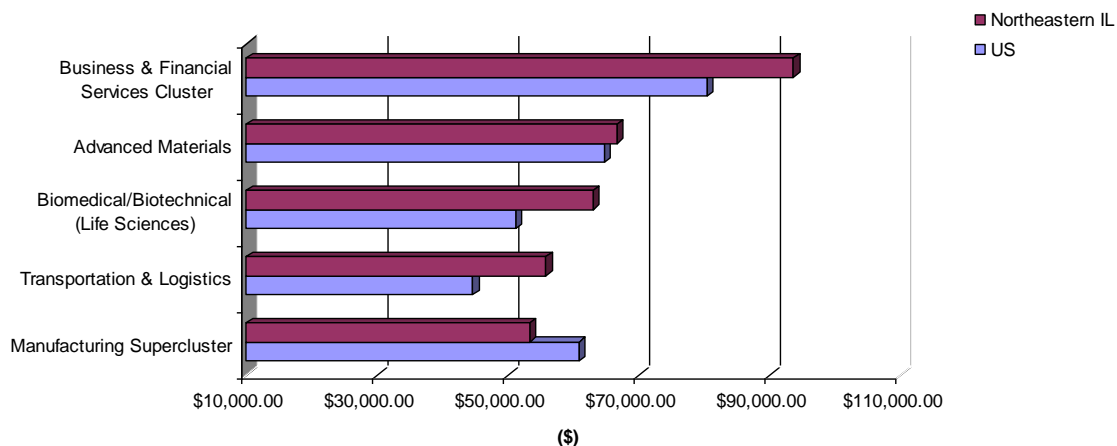
clusters in terms of employment include Manufacturing (195,860), Advanced Materials (190,315) and Transportation and Logistics (150,000). The Manufacturing Cluster is further broken down into smaller clusters and is highlighted in *Figure 14*.

Figure 11



The figure below highlights the wages of the top six clusters and shows how they compare with the average wage in those clusters for the United States. Five of the clusters offer a higher annual wage when compared to the average annual wage for these clusters in the nation. The manufacturing cluster in the region falls short of the national average by roughly \$5,000.

Figure 12



The table below identifies the average annual wage for each cluster and the subclusters for Manufacturing. Clusters in northeastern Illinois have annual wages above the US annual wage with the exception of Printing and Publishing and some of the Manufacturing subclusters.

Table 9

Cluster	US Wage	Regional Wage
Advanced Materials	\$64,697.71	\$66,621.23
Agribusiness, Food Processing & Technology	\$35,252.04	\$48,535.05
Apparel & Textiles	\$40,714.90	\$46,998.74
Arts, Entertainment, Recreation & Visitor Industries	\$33,488.62	\$36,133.89
Biomedical/Biotechnical (Life Sciences)	\$51,183.19	\$63,028.08
Business & Financial Services Cluster	\$80,401.18	\$93,677.65
Chemicals & Chemical Based Products	\$58,476.01	\$68,594.92
Defense & Security	\$62,320.01	\$65,611.45
Education & Knowledge Creation	\$40,950.58	\$47,596.82
Energy (Fossil & Renewable)	\$63,178.96	\$73,127.29
Forest & Wood Products	\$41,943.65	\$51,711.47
Glass & Ceramics	\$45,056.01	\$47,762.19
Information Technology & Telecommunications	\$78,381.51	\$79,940.13
Transportation & Logistics	\$44,678.20	\$55,839.72
Manufacturing	\$60,857.10	\$53,318.80
Primary Metal Mfg	\$56,546.79	\$50,575.15
Fabricated Metal Product Mfg	\$46,044.32	\$58,033.40
Machinery Mfg	\$56,237.31	\$67,368.29
Computer & Electronic Product Mfg	\$85,539.68	\$53,164.26
Electrical Equipment, Appliance & Component Mfg	\$51,681.98	\$57,249.06
Transportation Equipment Mfg	\$62,626.73	\$75,190.95
Mining	\$57,751.02	\$66,686.68
Printing & Publishing	\$59,866.55	\$50,109.87

Cluster Taxonomy

A literature review assessed recent cluster studies to identify a methodology that highlights regional economies, and utilizes cluster definitions that are both transparent and accessible to professionals. The broad scope of cluster definitions is intended as a method of inquiry to initiate collaborative efforts with economic development professionals and planners to identify and initiate cluster development within the region. The Industry Clusters used in this analysis were developed by the U.S. Economic Development Administration in partnership with Purdue University's Center for Regional Development and Indiana University's Indiana Business Research Center. The cluster concept uses a broad value-chain of industries – core industries, buyers, suppliers, and support industries. A detailed list of the clusters and their component industries may be found on the [Innovation in American Region's website](#). Information on cluster based economic development can be found with the [Economic Development Administration](#).

A comparative analysis was conducted on the clusters to identify trends and a possible competitive advantage –a high employment concentration (location quotient above 1.25) indicates a specialization in that cluster when compared to the national average, high wage levels can be a proxy for the value and knowledge added by the employee in that industry, cluster, or sector, and fast relative employment growth highlights growing demand.

The figure on the following page depicts employment growth and concentration of the clusters during the study period 2000 from 2007. Five clusters are heavily concentrated in the region (above the 1.25 benchmark) – Printing and Publishing (1.56), Advanced Materials (1.35), Business and Financial Services (1.32), Chemicals and Chemical Based Products (1.26), and Transportation and Logistics (1.25). Five clusters have seen employment growth over the seven year period, which include Arts & Entertainment (0.03%), Biomedical/Biotechnical (0.05%), Education (1.80%), Transportation & Logistics 0.23%), and Business & Financial (0.55%). Clusters that saw an increase in concentration during the study period include Transportation & Logistics, Forest & Wood Products, Education & Knowledge Creation, Defense & Security, and Apparel & Textiles. With the exception of Transportation & Logistics, the other clusters have location quotients under 1.00.

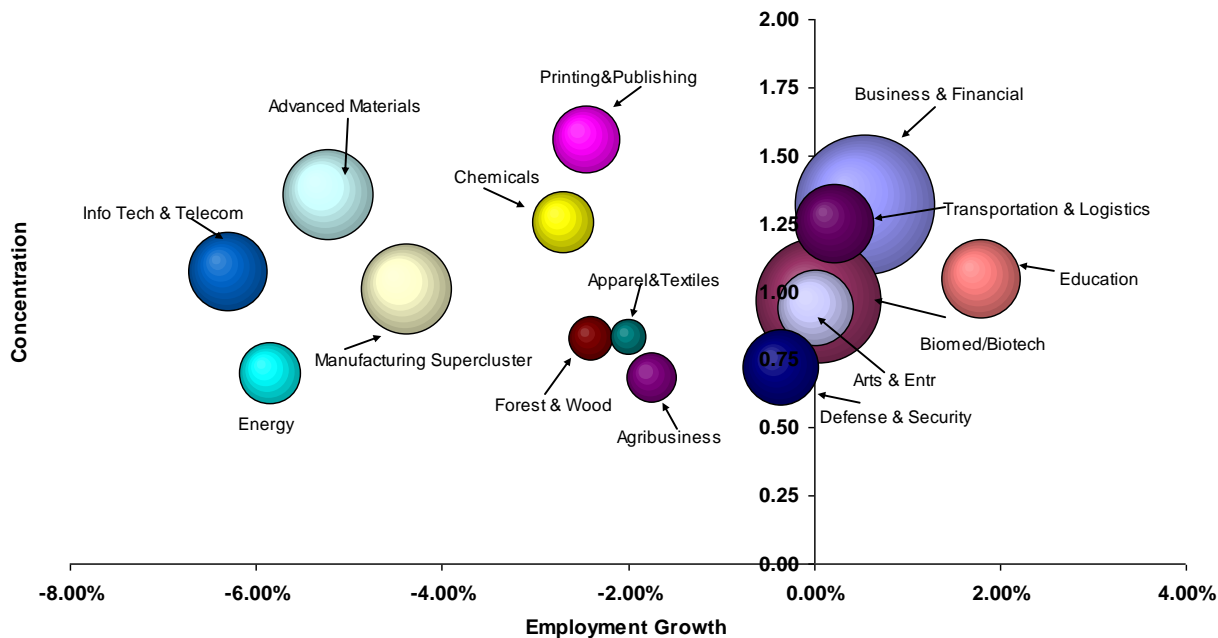


Figure 13

Highlights from the Cluster Perspective

The Business and Financial Cluster is strongly concentrated in the region (1.32), and it is the largest cluster in terms of employment (450,709) and offers the highest average wage

(\$93,680). The recent consolidation of the commodities markets and the growth of financial and professional services have made the region a hub for highly skilled knowledge workers. Furthermore, the strength of this and other clusters (i.e. Biomedical/Biotechnical) has led to a growth in software and computer related companies in this region that develop software and electronics that help business run more efficiently.

The Biomedical/Biotechnical Cluster (Life Sciences) cluster is the second largest in terms of employment (361,732) and offers a competitive wage (\$63,000). Although the cluster is not heavily concentrated, it has had growth in recent years. The region is home to six research and technology parks, world renowned research hospitals, as well as medical and pharmaceutical companies. As an example of the health and life sciences aspect of this cluster, the Workforce Boards of Metropolitan Chicago highlighted the growing need for trained nurses and medical technicians in the report *Health Care Workforce – Turning Crisis into Opportunity* as part of an approach to workforce development.

The Advanced Materials has seen average employment decline over the study period, but it is heavily concentrated in the region (1.36) and is the fourth largest cluster (190,315). Further, it is composed of industries that pay a competitive wage (\$66,000) above the national average. Along with the Manufacturing Cluster, research indicates that there has been a shift to niche manufacturing as well as a focus on the “green” economy. Agencies and companies are developing and discovering how the existing industrial base can adapted to green technology, green manufacturing, and renewable energy products, such as parts for wind or solar energy production, using advanced manufacturing. Many companies have moved away from traditional production line manufacturing and use more innovative design and engineering for specialized products that fit specific demands. Overall, manufacturing is adapting to an evolving supply chain and global market.

Transportation and Logistics has been growing in concentration (1.25), and is the fifth largest cluster in terms of overall employment (150,000) and has a competitive wage above the US average (\$55,800). The region’s transportation network allows easy access to both coasts and companies have access to the global supply chain and the nation’s third largest market in terms of overall population. Food production and pharmaceutical production is an example – the product is manufactured and prepared in the region, wholesaled and transported in and through the region, other states, and across the globe.

The Education Cluster and Arts and Entertainment Cluster, although they do not reach the benchmark concentration of 1.25 (their concentrations are 1.05 and 0.94 respectively), have experienced slight employment growth during the seven year study period. The Arts and Entertainment cluster grew 0.03% while the Education Cluster saw growth of 1.80%. Since the region has a strong presence of educational institutions and a multitude of arts, cultural, and sporting amenities these clusters have potential to experience further growth and increasing concentration.

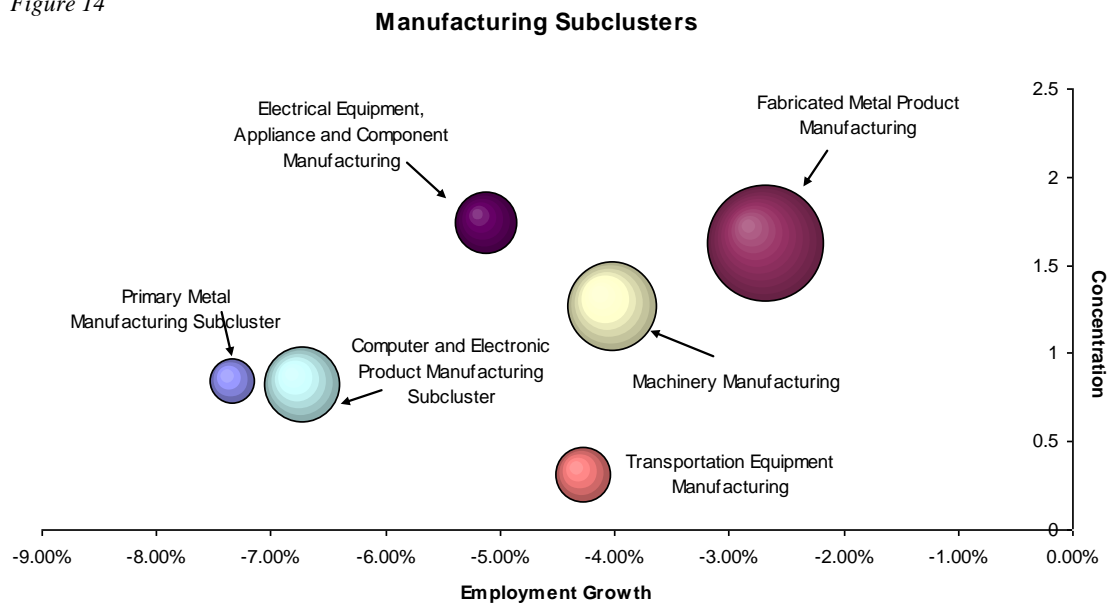
The Printing & Publishing Cluster and Chemicals Cluster are heavily concentrated in the region (1.56 and 1.26 respectively). Like their manufacturing counterparts, these clusters have seen employment growth decline over the seven year study period and have smaller overall employment (less than 110,000). However, as highlighted earlier chemical products are one of the largest exports from this region. Further analysis can explore the components and needs of these clusters.

The Information Technology and Telecommunications cluster is somewhat concentrated in the region but does not reach the benchmark level of 1.25. It also has seen declines in employment levels since 2000. The Energy cluster is not particularly highly concentrated in the region, and has also experienced employment declines, but recent growing interest in the “green” economy, which includes clean energy and the use of energy efficient materials and processes, may lead to growth in this cluster nationally in the future.

Manufacturing Supercluster

The manufacturing cluster consists of five sub clusters (figure 14): Fabricated Metal Product Manufacturing (1.62), Machinery Manufacturing (1.26), and Electrical Equipment, Appliance and Component Manufacturing (1.77). The other three, Primary Metal Manufacturing (0.83), Computer and Electronic Product Manufacturing (0.81), and Transportation Equipment Manufacturing (0.31) have concentrations below the benchmark 1.25. These clusters pay a competitive wage when compared to the US but have seen declines in average annual growth.

Figure 14



Further Discussion and Next Steps

The clusters identified in this preliminary analysis can be used as a basic foundation for the economic approach of the *GO TO 2040* plan. Clusters depend on interaction and collaboration between companies, education and research institutions, and all levels of government. Based on size and relative concentration, likely clusters for regional focus include Professional and Business Services, Biotechnology/Biomedical (Life Sciences), Advanced Materials, and Transportation & Logistics. Others that may also be relevant clusters to investigate include Education, Arts and Entertainment, Printing and Publishing, Chemicals, Information Technology and Telecommunications, Energy, and the Manufacturing supercluster. Further research and analysis into these benchmark clusters can help clarify and contribute to the development of unique clusters in this region.

Several next steps in this analysis are proposed below. The first step is to develop a methodology to identify and target detailed clusters, track them over time, and forecast future growth. Targeting specific clusters and tracking them can help determine if they are emerging clusters, established or maturing clusters or declining clusters. Such an analysis can assist to identify the most appropriate clusters for a regional focus and develop an effective approach to support their growth and development.

A second step involves addressing clusters at smaller geographies. Different parts of the region have specialized in different types of industries, leading to the formation of a variety of clusters. Identifying clusters at the county level or at even smaller geographies can help to understand what the needs of each cluster are, informing the development of strategies to support them.

Another helpful tool in the cluster development strategy is an asset map. An asset map can provide an inventory of firms connected to a particular cluster and identify its educational, research, and workforce requirements as well as possible infrastructure needs. It can also highlight networks and partnerships that foster and encourage cluster development in the region, helping to develop a cluster-based strategy economic development strategy. This will allow CMAP to target clusters, project future growth and recognize cluster life cycles which in turn will contribute to policy and investment strategies designed to build the region's workforce and diverse economic base.

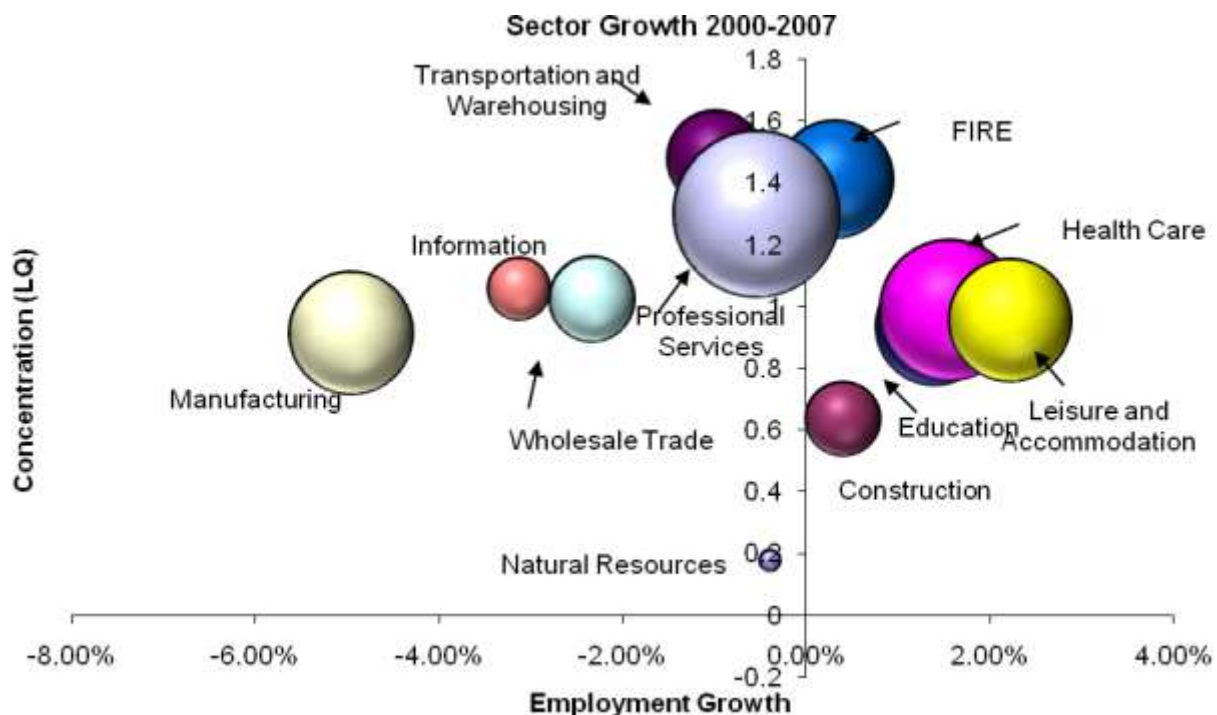
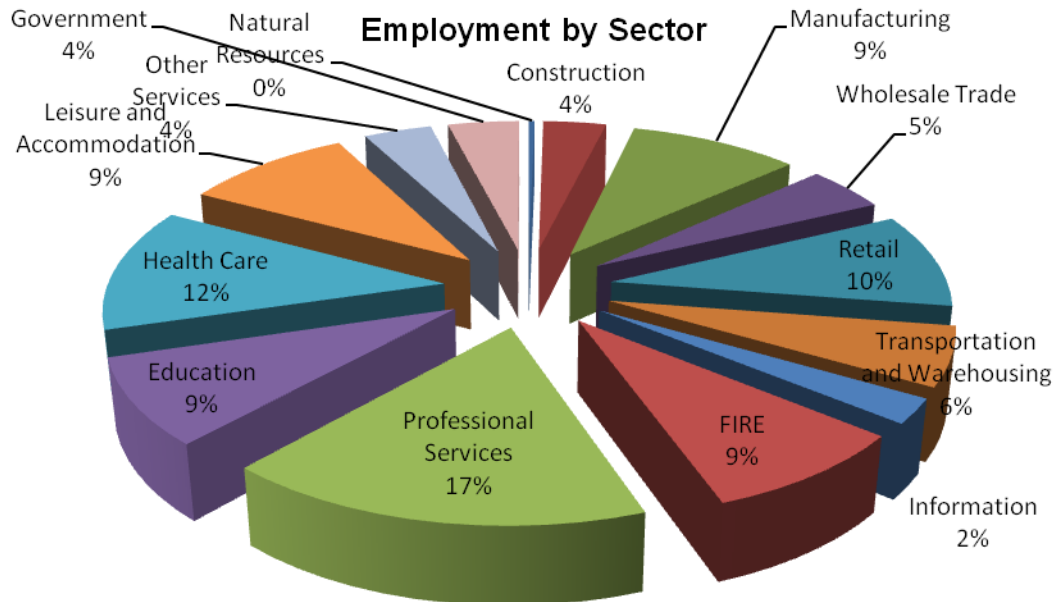
About CMAP

The Chicago Metropolitan Agency for Planning (CMAP) was created to integrate planning for land use and transportation in the seven counties of northeastern Illinois: Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will. By state and federal law, CMAP is responsible for producing the region's official, integrated plan for land use and transportation. The *GO TO 2040* planning campaign will develop and implement strategies to address projected growth in population and employment and their serious implications for transportation, housing, economic development, open space, the environment, and natural resources. See www.cmap.illinois.gov for more information.

Appendix: County Profiles

Cook County

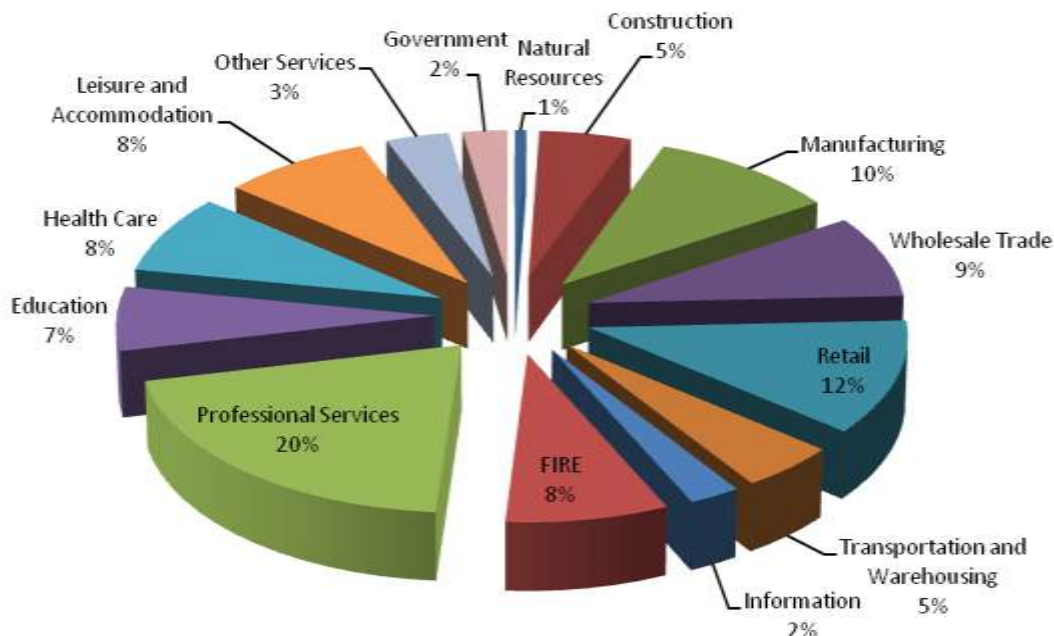
Population (2007)	2,285,107
Employment (2007)	2,489,224
Unemployment (2007)	5.1%
Per Capita Income (2006)	\$41,993
Gross Product (2008 estimate)	239,400 billion



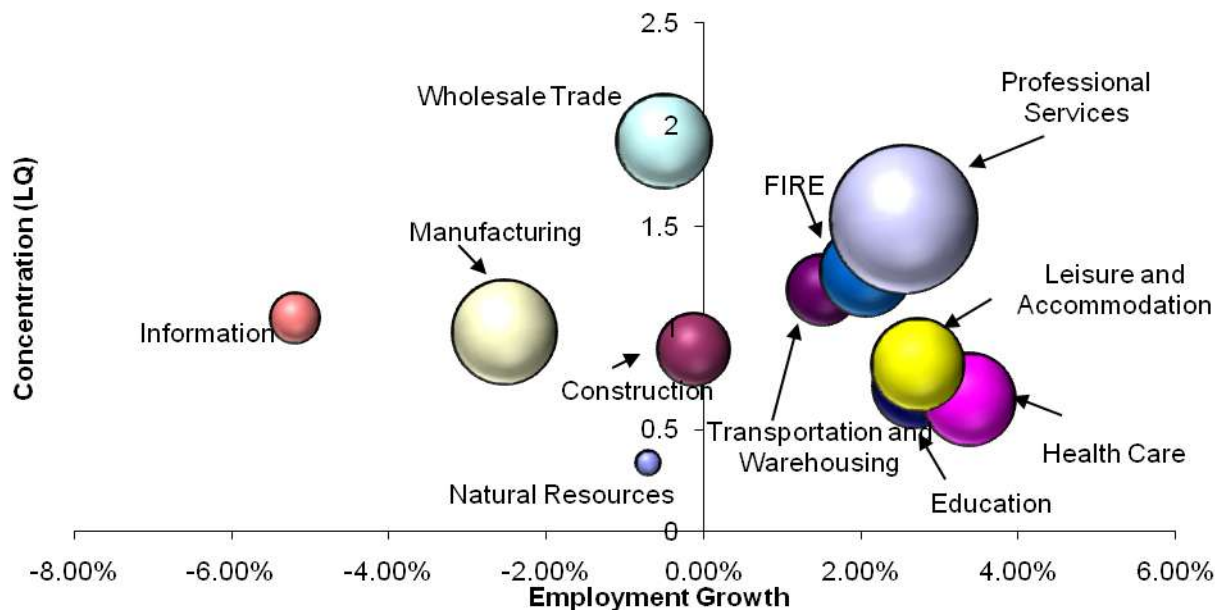
DuPage County

Population (2007)	929,192
Employment (2007)	589,407
Unemployment (2007)	3.8%
Per Capita Income (2006)	\$51,866
Gross Product (2008 estimate)	\$56,582 billion

Employment by Sector

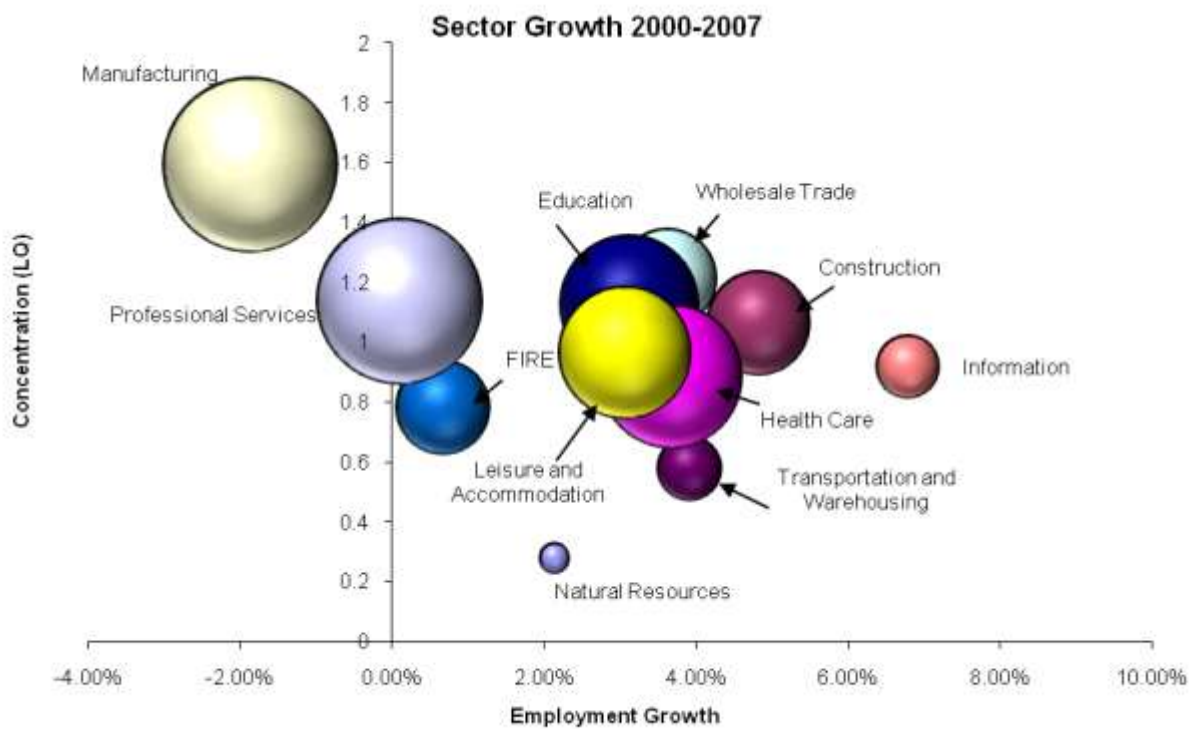
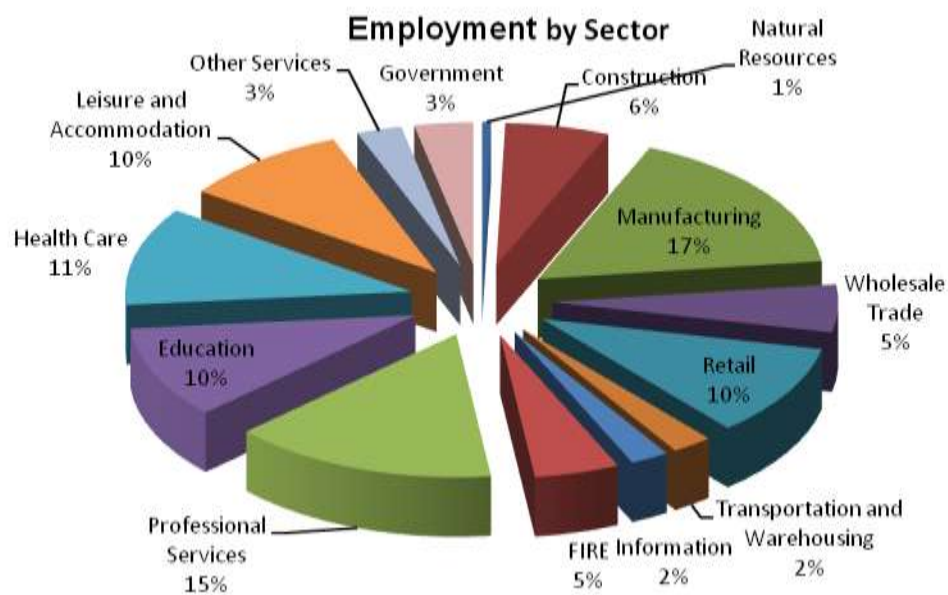


Sector Growth 2000-2007



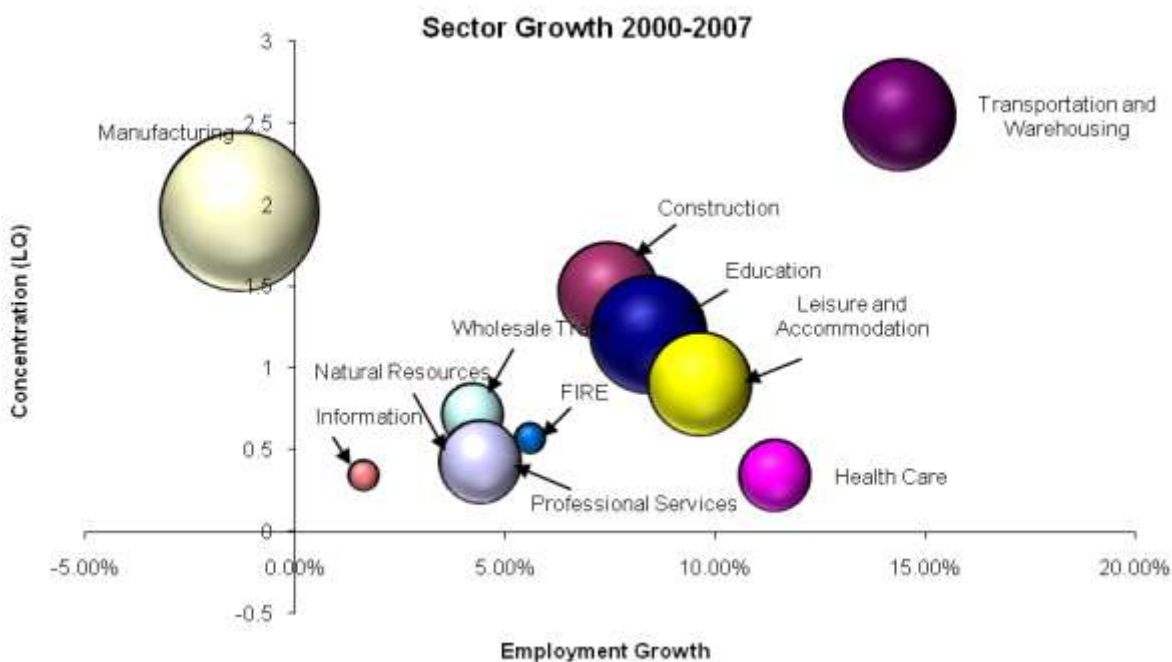
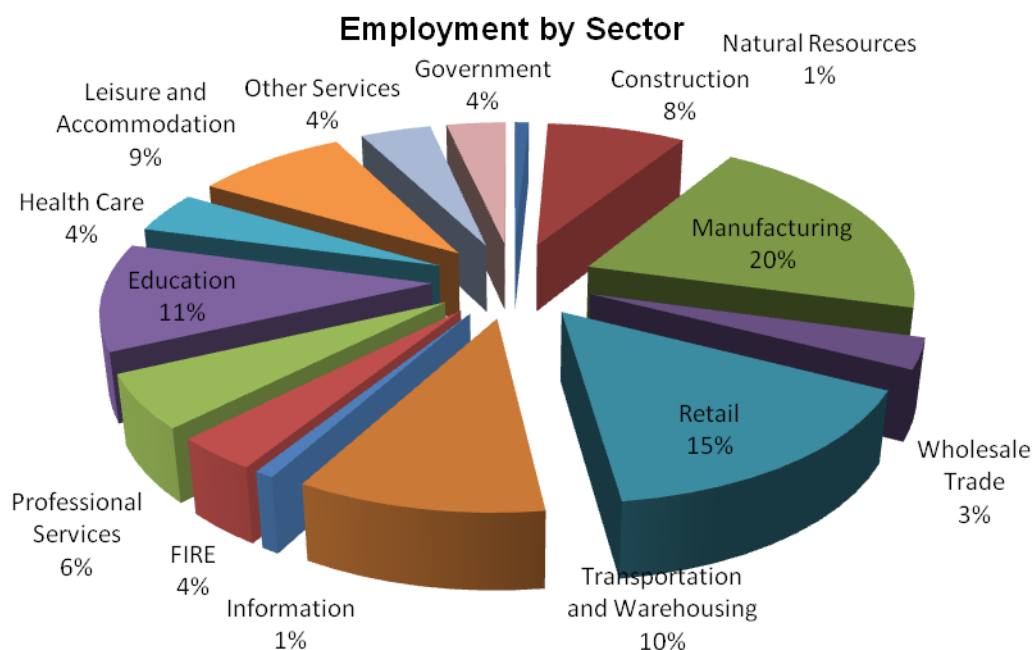
Kane County

Population (2007)	501,021
Employment (2007)	206,450
Unemployment (2007)	4.8%
Per Capita Income (2006)	\$34,458
Gross Product (2008 estimate)	\$17,900 billion



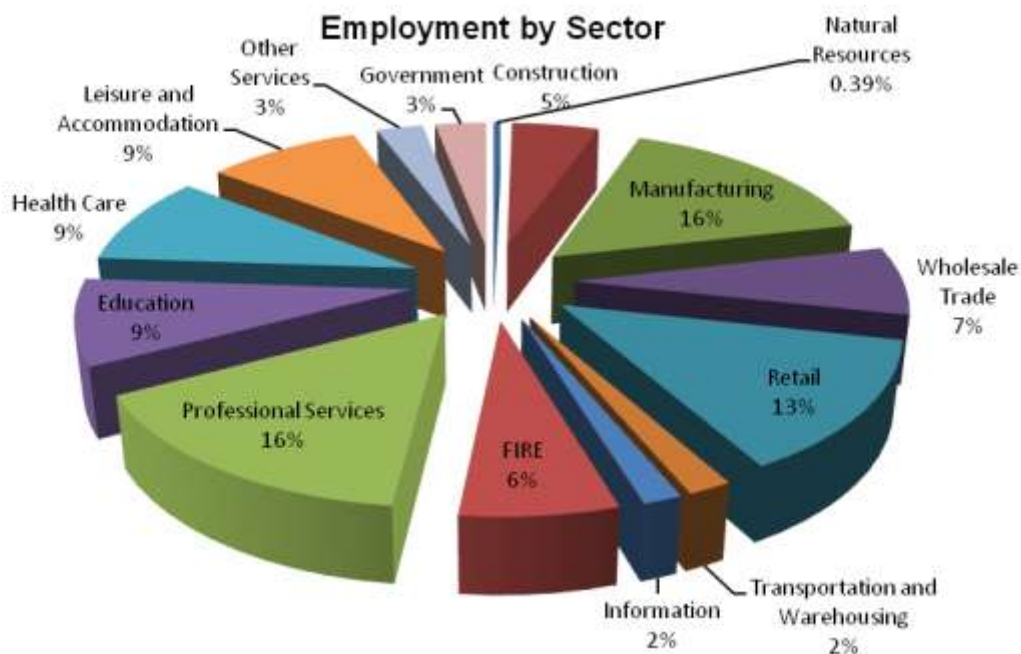
Kendall County

Population (2007)	96,818
Employment (2007)	23,329
Unemployment (2007)	4.7%
Per Capita Income (2006)	\$31,722
Gross Product (2008 estimate)	\$2,064 billion

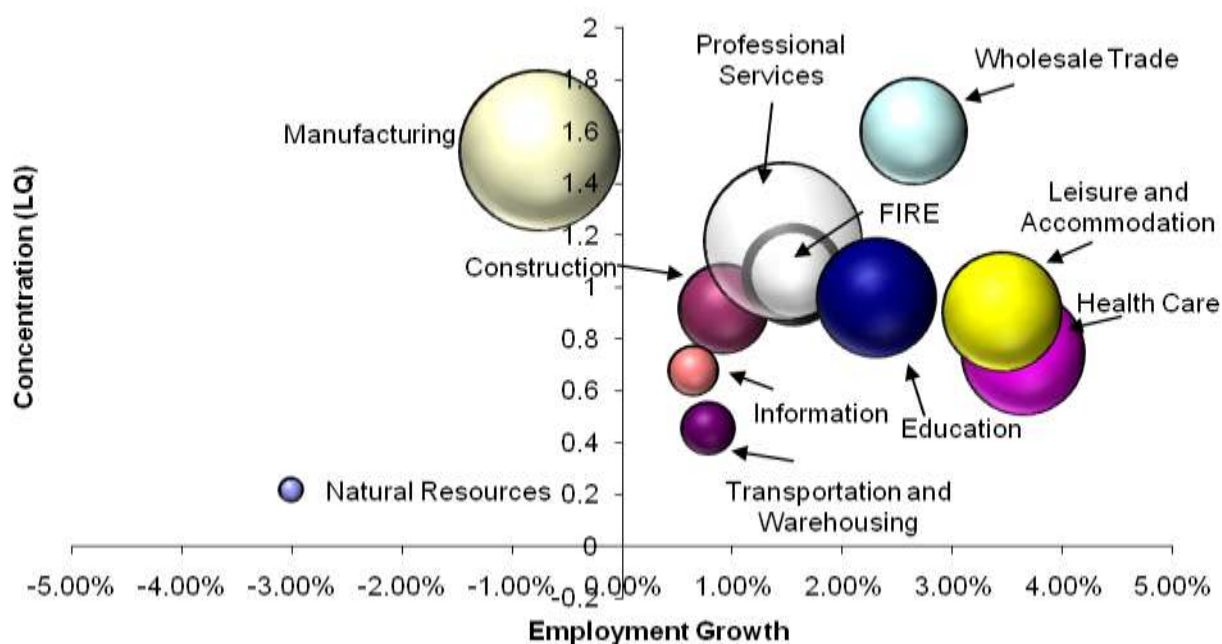


Lake County

Population (2007)	710,241
Employment (2007)	326,480
Unemployment (2007)	5.0%
Per Capita Income (2006)	\$53,629
Gross Product (2008 estimate)	\$30,210 billion

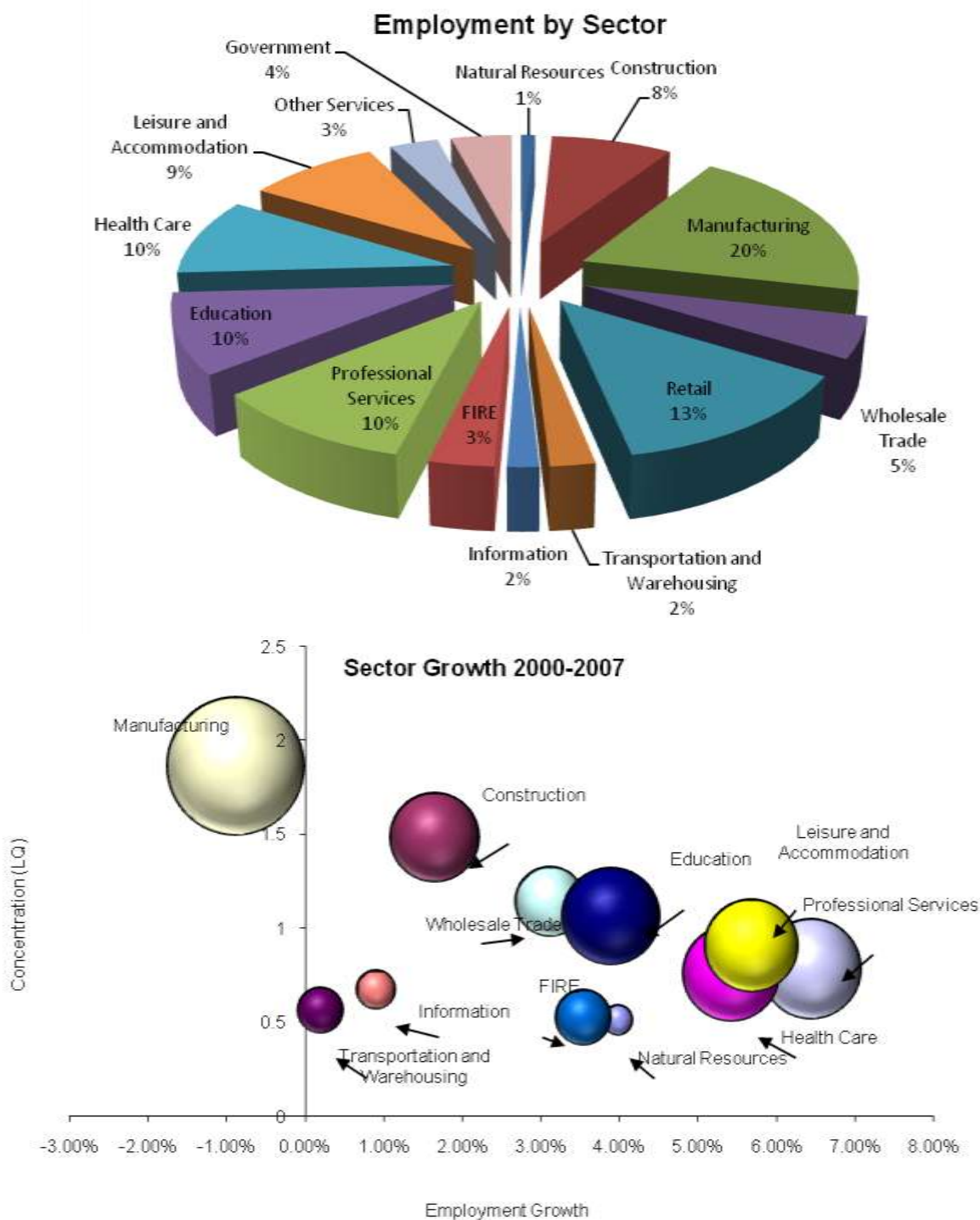


Sector Growth 2000-2007



McHenry County

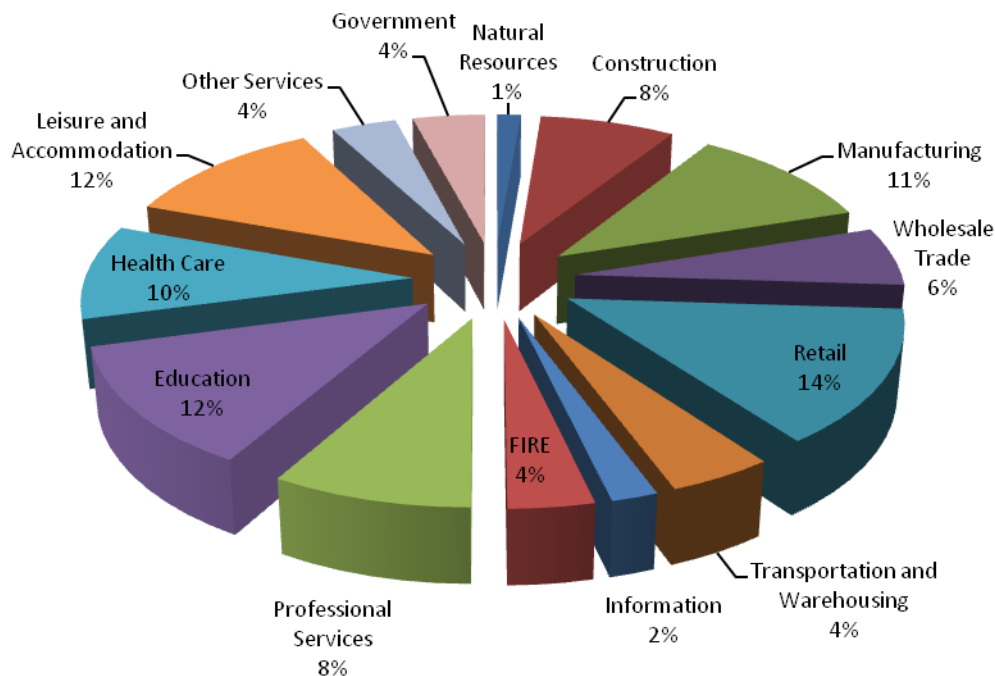
Population (2007)	315,943
Employment (2007)	97,950
Unemployment (2007)	4.3%
Per Capita Income (2006)	\$37,720
Gross Product (2008 estimate)	\$8,400 billion



Will County

Population (2007)	673,586
Employment (2007)	193,178
Unemployment (2007)	4.7%
Per Capita Income (2006)	\$34,362
Gross Product (2008 estimate)	\$15,318 billion

Employment by Sector



Sector Growth 2000-2007

